10/1/62

To:

From:

# What we know about sleep

The new view is not that we sleep but that we are awake. Sleeping is far less complicated than being awake and once we understand the waking state we can say that life has two equal phases

Sleep, or its equivalent in the natural condition and as a permanent state of the lowest forms of life, and reversible to higher forms. The human fetus, like the adult of lower forms, reacts to stimuli, and it has been shown to suck its thumb. Premature babies have the same electroencephalogram whether asleep or awake, and there is not much clinical difference. The infant normally sleeps almost all the time that he is not preoccupied by hunger or other painful stimuli. People who fall asleep involuntarily during or after meals perpetuate the infantile pattern.

Sleep as a requirement generally diminishes as age advances. When senility sets in, structural changes in the midbrain bring on drowsiness not unlike genuine sleep, or coma. These states and another, called hibernation, and

[illegible] well differ from true sleep in that they are not easy to terminate, spontaneous neuronal activity is depressed, and oxygen uptake is decreased. There have been numerous cases of prolonged pathological sleep, many lasting for weeks, some for months and a few for years. They can be induced by trauma, disease or autohypnosis.

[illegible]

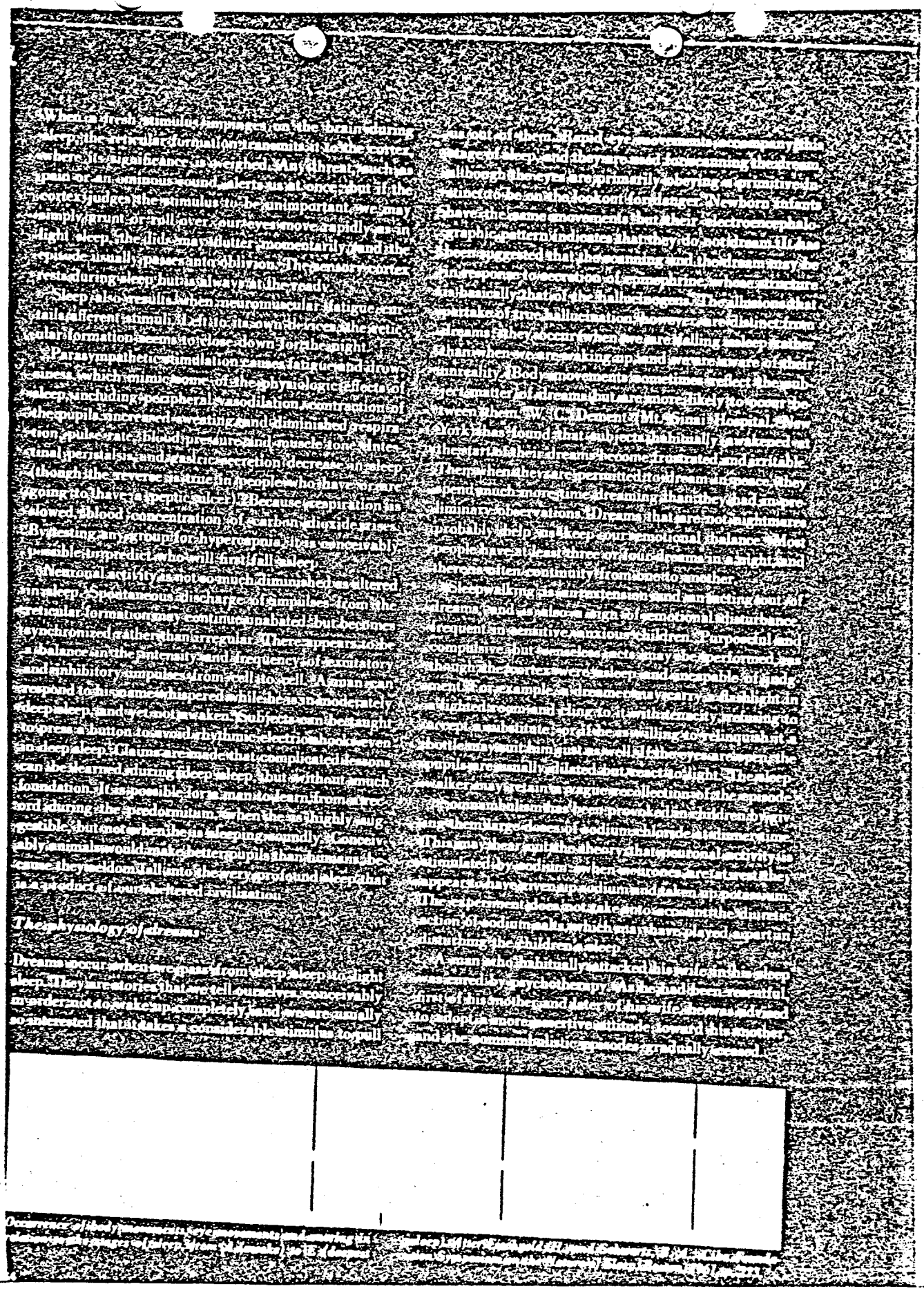
It used to be thought that there was a sleep center, but we now know that there is only a waking center, the reticular formation in the midbrain, which arouses us and keeps us awake. When this diffuse system of neurons does not efficiently, sleep supervenes. Cerebral thrombosis, [illegible] and certain things [illegible] that affect the reticular formation can cause prolonged or permanent sleep. But there is no lesion that will cause permanent insomnia. The reticular formation can be activated from above or below, from the primitive type of waking that is a subcortical affair, and the higher type, which depends upon discrimination, involves the cortex. Electric stimulation of the reticular formation or a dose of amphetamine produces an alert animal; sodium amytal produces a sleeping animal. The cortex is able to control the reticular formation in such circumstances.

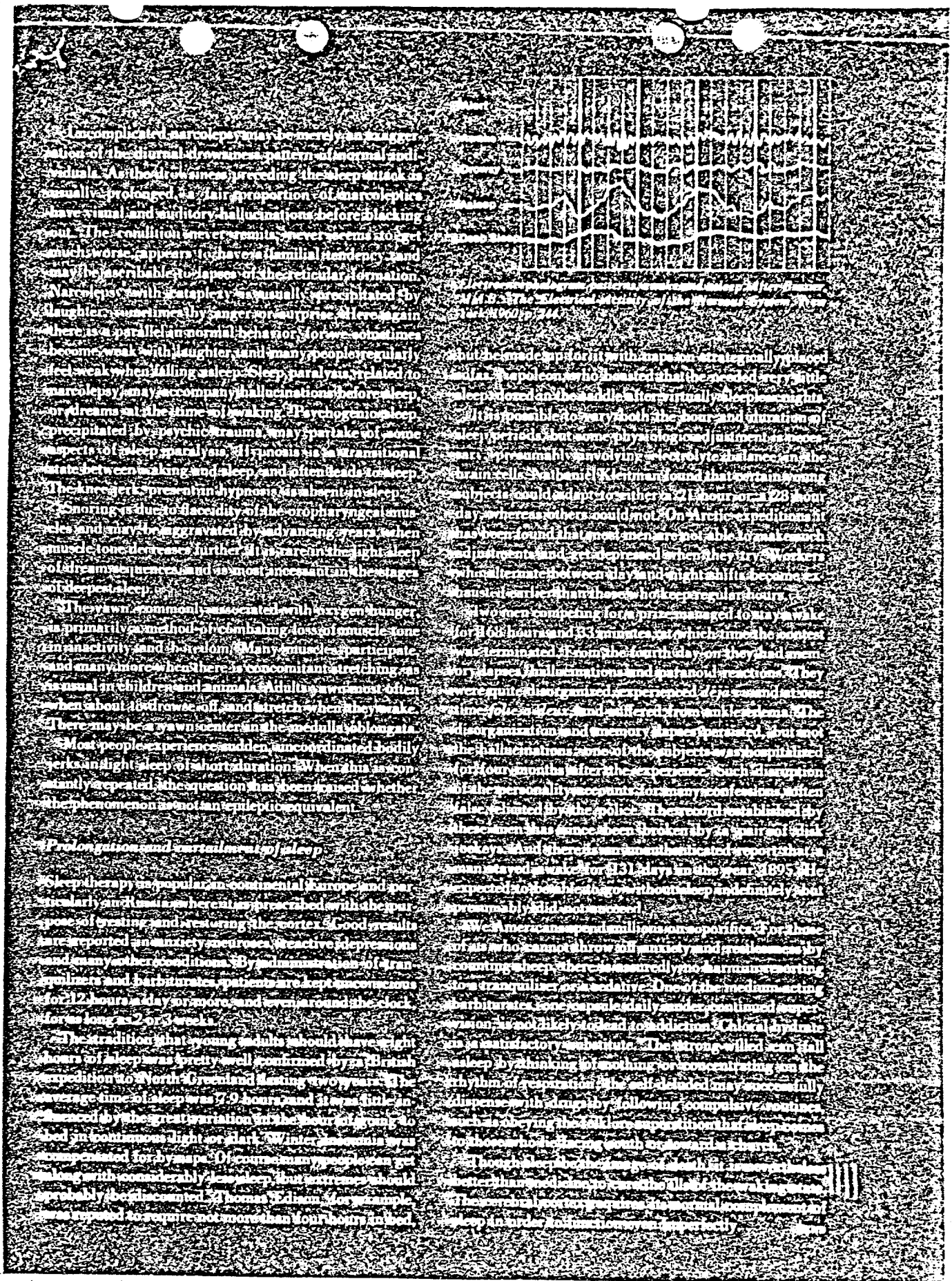
Pavlov showed that sleep is equivalent to inhibition. [illegible] and the modification of reflexes [illegible] subjected to many dull and unvarying stimuli, when [illegible] stimuli [illegible] would [illegible] extraordinary [illegible] of Oxford reports who had their [illegible] collodion [illegible] of light while listening to monotonous [illegible] gradually [illegible] to [illegible] rhythm [illegible] to sleep [illegible] stimuli [illegible] getting [illegible] to [illegible] information [illegible] in the [illegible] rabbit hypnotized by a snake not only succumbs to the rhythm of the snake's movements but becomes [illegible] become [illegible] remain motionless, ready to play dead at his most monotonous cue in the presence of [illegible] danger.

To return to Pavlov's animals, they would probably have gone to sleep sooner without any stimulus at all [illegible] never. Normal cats will sleep 18 to 20 hours a day at home [illegible] under [illegible] room.

[illegible] and insomnia may result. And certain rhythms of stimuli produce [illegible] in some people.

The significance of [illegible] stimuli is an important factor in the [illegible] [illegible] [illegible]





# Sea to Sea